

REMARKS

Applicants amend claims 1 and 8, and cancel claim 16. Claims 2-5 and 9-12 remain withdrawn. Claims 1, 6-8, 13-15 and 17 are currently pending, of which claims 1, 8, 13, 14 and 15 are independent. No new matter has been added. Applicants respectfully submit that the pending claims define over the art of record.

I. Amendments to the Specification

Applicants amend the Specification to delete the following sentence: "Alternatively, the solid wax may be heated after the engagement together with the outer cup 12 to melt and remove the solid wax." No new matter has been added.

II. Rejection of Claims under 35 U.S.C. § 112

Claims 1, 6-8 and 17 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. More specifically, with regard to independent claims 1 and 8, the Examiner asserts that it is unclear if Applicants are claiming a finally assembled product or a product-by-process feature.

Applicants amend independent claim 1 to recite "a paste wax applied to said inner diameter portions of said ring-shaped roller members to retain said plurality of rolling members on said inner diameter portions of said ring-shaped roller members." Applicants amend independent claim 8 to recite "wherein said plurality of rolling members are retained on inner diameter portions of said roller members by solid wax." In the claimed invention, the paste wax or solid wax remains in the joint without being removed. That is, the recitation of the paste wax in claim 1 and the recitation of the solid wax in claim 8 specify final assembled products, not intermediate products. Applicants believe that amended claims 1 and 8 clarify that the claims are directed to finally assembled products. As such, Applicants respectfully request reconsideration and withdrawal of the 35 U.S.C. § 112, second paragraph, of claims 1, 6-8 and 17.

III. Rejection of Claims under 35 U.S.C. § 103(a)

Claims 1, 6-8 and 13-17 are rejected under 35 U.S.C. § 103(a) as being obvious over U.S. Patent Number 5,989,124 to Goto (hereafter "Goto") in view of U.S. Patent Number 3,239,291 to Batt (hereafter "Batt"), U.S. Patent Number 1,982,932 to Scriebner (hereafter "Scriebner") and U.S. Patent Number 1,907,015 to Swart (hereafter "Swart").

A. Claim 1

Applicants respectfully submit that the Goto, Batt, Scriebner and Swart references, alone or in any combination, fail to teach or suggest at least "a paste wax applied to said inner diameter portions of said ring-shaped roller members to retain said plurality of rolling members on said inner diameter portions of said ring-shaped roller members," as recited in independent claim 1. In the claimed invention, the paste wax remains in the joint without being removed. That is, claim 1 which recites paste wax specifies a final assembled product, not an intermediate product. Since the paste wax is selected so as not to cause chemical reaction with a lubricant, there is no concern that the lubricant will change in quality.

The Goto reference relates to a tripod type constant velocity universal joint. The universal joint includes a trunnion 66, rolling elements 6 and a roller 72. In a former manufacturing method, the rolling elements are **temporarily** adhered with grease onto the roller inner circumferential surface. A stopper of the roller prevents the rolling elements from coming out when the roller, together with the rolling elements, is fitted over the trunnion. See Goto, column 6, lines 9-14, Figure 25 and related text. In the Goto reference, the grease is used temporarily to adhere the rolling elements onto the roller. That is, the grease is part of an intermediate product, not a final assembled product. The Goto reference does not teach or suggest that the grease is applied as part of a final assembled product. As such, the Goto reference does not teach or suggest "a paste wax applied to said inner diameter portions of said ring-shaped roller members to retain said plurality of rolling members on said inner diameter portions of said ring-shaped roller members," as recited in claim 1. The addition of the Batt reference fails to cure this deficiency.

The Batt reference relates to roller bearings and means for retaining the needles or rollers in their cage before assembly of the bearing. A caged roller assembly includes a roller cage and rollers secured in the cage by a wax bonding. The wax is preferably a grease or oil-based wax which **readily blends with another lubricant** which is used after installation of the bearing in its races. See Batt, page 3, column 1. In the Batt reference, the wax blends with another lubricant after installation. The wax is removed by blending with the lubricant, and as such, there is a concern that the lubricant may change in quality. That is, the wax is part of an intermediate product, not a final assembled product. As such, the Batt reference does not teach or suggest “a paste wax applied to said inner diameter portions of said ring-shaped roller members to retain said plurality of rolling members on said inner diameter portions of said ring-shaped roller members,” as recited in claim 1. The addition of the Scriebner reference fails to cure this deficiency.

The Scriebner reference relates to assembling tapered bearing rollers in a cup or outer race. A bearing cup 1 or outer race has a conical bore or raceway 2 and a series of taper rollers 3 mounted in the raceway. Paraffin or other hard wax is used to coat the exposed portions of the periphery of the rollers 3, the ends of the cup 1 and the outer periphery of the cup 1. The paraffin may also enter the triangular spaces 5 between adjacent rollers and the cup. The paraffin coating may be confined to the rollers and the portions of the bore 2 of the cup inwardly of the ends. See Scriebner, page 2, column 2. The Scriebner reference does not teach or suggest that the paraffin or wax is applied as part of a final assembled product. As such, the Scriebner reference does not teach or suggest “a paste wax applied to said inner diameter portions of said ring-shaped roller members to retain said plurality of rolling members on said inner diameter portions of said ring-shaped roller members,” as recited in claim 1. The addition of the Swart reference fails to cure this deficiency.

The Swart reference relates to anti-friction bearings which include rolling elements (as an annular series of balls or rollers). A soluble cage is provided in which the rolling elements are assembled in an annular series before being inserted in the raceways. The balls or rollers are held in juxtaposition in the cage. The cage is formed of waxy substance readily soluble in a hydrocarbon or lubricating oil, and the waxes used are pentichloride naphthalene, bee's wax and carnuba wax, etc. The cage serves as a lubricant initially **until it is dissolved and displaced by**

the lubricating oil. See Swart, page 2, columns 1 and 2. In the Swart reference, the waxy substance blends with the lubricant oil after installation. The waxy substance is removed by blending with the lubricating oil, and as such, there is a concern that the lubricating oil may change in quality. That is, the waxy substance is part of an intermediate product, not a final assembled product. As such, the Swart reference does not teach or suggest “a paste wax applied to said inner diameter portions of said ring-shaped roller members to retain said plurality of rolling members on said inner diameter portions of said ring-shaped roller members,” as recited in claim 1.

In view of the foregoing arguments, Applicants respectfully submit that the Goto, Batt, Scriebner and Swart references, alone or in any combination, fail to teach or suggest each and every feature of independent claim 1. As such, Applicants respectfully request reconsideration and withdrawal of the 35 U.S.C. § 103(a) rejection of claim 1.

B. Claims 6 and 7

In view of the foregoing arguments, Applicants respectfully submit that the Goto, Batt, Scriebner and Swart references, alone or in any combination, fail to teach or suggest each and every feature of independent claim 1. Claims 6 and 7 depend upon independent claim 1, and add separate and patentable limitations to claim 1. As such, for this and the reasons set forth above, Applicants respectfully submit that dependent claims 6 and 7 define over the art of record.

Furthermore, the Goto, Batt, Scriebner and Swart references, alone or in any combination, fail to teach or suggest a paste wax comprising “an oil/fat component which has a consistency lower than that of a lubricating grease to be enclosed in said inner space portion of said outer member,” as recited in claim 6. This oil/fat component of the paste wax allows the joint to maintain the performance of a lubricating grease even when the paste wax is present together with the lubricating grease in the inner space portion (Specification, page 24, line 20 – page 25, line 3). The Goto, Batt, Scriebner and Swart references, alone or in any combination, do not teach or suggest a wax comprising an oil/fat component which has a consistency lower than that of a lubricating grease, as required by claim 6. As such, the Goto, Batt, Scriebner and Swart references, alone or in any combination, cannot maintain the performance of a lubricating grease when a wax is present together with the lubricating grease.

C. Claim 8

Applicants respectfully submit that the Goto, Batt, Scriebner and Swart references, alone or in any combination, fail to teach or suggest at least “said plurality of rolling members are retained on said inner diameter portions of said roller members by solid wax,” as recited in independent claim 8. In the claimed invention, the solid wax remains in the joint without being removed. That is, the recitation of the solid wax in claim 8 specifies a final assembled product, not an intermediate product. Since the solid wax is selected so as not to cause chemical reaction with a lubricant, there is no concern that the lubricant will change in quality.

In the Goto reference, the grease is used temporarily to adhere the rolling elements onto the roller. That is, the grease is part of an intermediate product, not a final assembled product. The Goto reference does not teach or suggest that the grease is applied as part of a final assembled product. In addition, the Goto reference does not teach or suggest a solid wax. As such, the Goto reference does not teach or suggest “said plurality of rolling members are retained on said inner diameter portions of said roller members by solid wax,” as recited in claim 8. The addition of the Batt reference fails to cure this deficiency.

In the Batt reference, the wax blends with another lubricant after installation. The wax is removed by blending with the lubricant, and as such, there is a concern that the lubricant may change in quality. That is, the wax is part of an intermediate product, not a final assembled product. As such, the Batt reference does not teach or suggest “said plurality of rolling members are retained on said inner diameter portions of said roller members by solid wax,” as recited in claim 8. The addition of the Scriebner reference fails to cure this deficiency.

The Scriebner reference does not teach or suggest that the paraffin or wax is applied as part of a final assembled product. As such, the Scriebner reference does not teach or suggest “said plurality of rolling members are retained on said inner diameter portions of said roller members by solid wax,” as recited in claim 8. The addition of the Swart reference fails to cure this deficiency.

In the Swart reference, the waxy substance blends with the lubricant oil after installation. The waxy substance is removed by blending with the lubricating oil, and as such, there is a

concern that the lubricating oil may change in quality. That is, the waxy substance is part of an intermediate product, not a final assembled product. As such, the Swart reference does not teach or suggest “said plurality of rolling members are retained on said inner diameter portions of said roller members by solid wax,” as recited in claim 8.

In view of the foregoing arguments, Applicants respectfully submit that the Goto, Batt, Scriebner and Swart references, alone or in any combination, fail to teach or suggest each and every feature of independent claim 8. As such, Applicants respectfully request reconsideration and withdrawal of the 35 U.S.C. § 103(a) rejection of claim 8.

D. Claim 13

Applicants respectfully submit that the Goto, Batt, Scriebner and Swart references, alone or in any combination, fail to teach or suggest at least “providing a plurality of rolling members to said inner diameter portion of said roller member to retain said plurality of provided rolling members on said roller member by said paste wax,” as recited in independent claim 13. In the claimed invention, the paste wax remains in the joint without being removed. That is, the recitation of the paste wax in claim 13 specifies a final assembled product, not an intermediate product. Since the paste wax is selected so as not to cause chemical reaction with a lubricant, there is no concern that the lubricant will change in quality.

As set forth above in connection with independent claim 1, the Goto, Batt, Scriebner and Swart references, alone or in any combination, fail to teach or suggest at least “a paste wax applied to said inner diameter portions of said ring-shaped roller members to retain said plurality of rolling members on said inner diameter portions of said ring-shaped roller members,” as recited in independent claim 1. In view of the foregoing arguments, Applicants respectfully submit that the Goto, Batt, Scriebner and Swart references, alone or in any combination, fail to teach or suggest each and every feature of independent claim 13. As such, Applicants respectfully request reconsideration and withdrawal of the 35 U.S.C. § 103(a) rejection of claim 13.

E. Claim 14

Applicants respectfully submit that the Goto, Batt, Scriebner and Swart references, alone or in any combination, fail to teach or suggest at least “supplying paste wax to said inner diameter portion of said roller member to retain said plurality of provided rolling members on said roller member by said paste wax,” as recited in independent claim 14. In the claimed invention, the paste wax remains in the joint without being removed. That is, the recitation of the paste wax in claim 14 specifies a final assembled product, not an intermediate product. Since the paste wax is selected so as not to cause chemical reaction with a lubricant, there is no concern that the lubricant will change in quality.

As set forth above in connection with independent claim 1, the Goto, Batt, Scriebner and Swart references, alone or in any combination, fail to teach or suggest at least “a paste wax applied to said inner diameter portions of said ring-shaped roller members to retain said plurality of rolling members on said inner diameter portions of said ring-shaped roller members,” as recited in independent claim 1. In view of the foregoing arguments, Applicants respectfully submit that the Goto, Batt, Scriebner and Swart references, alone or in any combination, fail to teach or suggest each and every feature of independent claim 14. As such, Applicants respectfully request reconsideration and withdrawal of the 35 U.S.C. § 103(a) rejection of claim 14.

F. Claim 15

Applicants respectfully submit that the Goto, Batt, Scriebner and Swart references, alone or in any combination, fail to teach or suggest at least “a solid wax-retaining step is performed such that melted solid wax is supplied to said plurality of provided rolling members, and said solid wax is solidified to retain said rolling members on said roller member,” as recited in independent claim 15. In the claimed invention, the solid wax remains in the joint without being removed. That is, the recitation of the solid wax in claim 15 specifies a final assembled product, not an intermediate product. Since the solid wax is selected so as not to cause chemical reaction with a lubricant, there is no concern that the lubricant will change in quality.

As set forth above in connection with independent claim 8, the Goto, Batt, Scriebner and Swart references, alone or in any combination, fail to teach or suggest at least “said plurality of rolling members are retained on said inner diameter portions of said roller members by solid wax,” as recited in independent claim 8. In view of the foregoing arguments, Applicants respectfully submit that the Goto, Batt, Scriebner and Swart references, alone or in any combination, fail to teach or suggest each and every feature of independent claim 15. As such, Applicants respectfully request reconsideration and withdrawal of the 35 U.S.C. § 103(a) rejection of claim 15.

G. Claim 17

In view of the foregoing arguments, Applicants respectfully submit that the Goto, Batt, Scriebner and Swart references, alone or in any combination, fail to teach or suggest each and every feature of independent claim 1. Claim 17 depends upon independent claim 1, and adds separate and patentable limitations to claim 1. As such, for this and the reasons set forth above, Applicants respectfully submit that dependent claim 17 defines over the art of record.

CONCLUSION

In view of the foregoing amendments and arguments, Applicants believe the pending application is in condition for allowance.

Any fee due is authorized to be charged to our Deposit Account No. 12-0080, under Order No. TOW-129US from which the undersigned is authorized to draw. If the requisite petition does not accompany this response, the undersigned hereby petitions under 37 C.F.R. §1.136(a) for an extension of time for as many months as are required to render this submission timely.

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